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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/092,011	03/05/2002	Gary L. Shuck	100/12710	7584
21569	7590	03/03/2006		
CALIPER LIFE SCIENCES, INC. 605 FAIRCHILD DRIVE MOUNTAIN VIEW, CA 94043-2234			EXAMINER NAGPAUL, JYOTI	
			ART UNIT	PAPER NUMBER
			1743	
DATE MAILED: 03/03/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/092,011

Applicant(s)

SHUCK, GARY L.

Examiner

Jyoti Nagpaul

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4-10 and 15-30 is/are rejected.
- 7) ☒ Claim(s) 11-14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Amendment filed on January 25, 2006 has been acknowledged. Claims 1 and 4-30 are pending.

Response to Amendment

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Rejection of Claims 1,9-14,18-20 and 23-28 as being anticipated by Hasskamp (US 4537231) has been *withdrawn* in light of applicant's arguments.

Rejection of Claims 4-8 and 25-28 as being unpatentable over Hasskamp has been *withdrawn* in light of applicant's arguments.

Rejection of Claims 15-17,21-22 and 29-30 as being unpatentable over Hasskamp in view of Swedberg (US 5571410) has been *withdrawn* in light of applicant's arguments.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1,9-10,15-18,20-23** are rejected under 35 U.S.C. 102(b) as being anticipated by Brand (US866442).

Brand teaches a semiconductor device assembly. The method comprises placing the microfluidic device (12) in a vacuum chamber (66) and applying a vacuum

(62) to the vacuum chamber (66). The method further comprises of while the microfluidic device (12) remains under vacuum (62), introducing the gas or fluid (92) into the vacuum chamber (82) such that the microfluidic device (10) is submerged in the gas or fluid (92). Brand does not explicitly disclose venting the at least one microfluidic element (63) to the gas or fluid (92) and then filling the at least one microfluidic element (63) with the gas or fluid. However, it is inherently known that venting the at least one microfluidic element/channel (63) to the gas or fluid (92) and then filling the at least one microfluidic element/channel (63) with the gas or fluid. Brand teaches, "After positioning the semiconductor device 12 and substrate 14 as represented by blocks 120 and 122 on the support 64, when they are connected as shown by block 124, thereafter, a vacuum 62 may be drawn 128 in vacuum chamber 66 by operation of the valve 74, 78 and the vacuum source 76. That is, the gas or air in the vacuum chamber 66 and in the gap 16 may be evacuated through the evacuation line 72 to create a vacuum, pressure less than atmospheric pressure, within the vacuum chamber 66 and in the gap 16. Either simultaneously or sequentially, but preferably substantially simultaneously, a pressure is applied 130 from the pressure source 92 through the pressure line 94 and valve 96 to the pressure chamber 80. The pressure applies a force illustrated in phantom by arrows 98 and 100, as illustrated in drawing FIG. 2, against the fill material 60 to help urge the fill material towards the interior 63 of the gap 16. After the pressure 98 and 100 has been applied and the vacuum 62 has been applied to the lower surface 38 and, more particularly, through the thermal vias 42, 44, 46, 48, 50 and 52 to the interior 63 of the gap 16, for a selected period of time determined by experimentation for

the selected fill material, the valves 74 and 96 are closed and the vent valves 106 and 78 are opened to relieve the vacuum 62 and to release the pressure within the respective vacuum chamber 66 and pressure chamber 80 as illustrated by blocks 134 and 136. Thereafter, the lid 84 is opened and the semiconductor device assembly 10 removed 136 therefrom.” (See Col. 7, Lines 59-67-Col. 8, Lines 1-18) Brand further teaches filling the at least one microfluidic element/channel (63) with the gas or fluid (92) comprises filling the at least one microfluidic channel (16) with a degassed fluid. (See Col. 7, lines 33-35) Brand further teaches filling the at least one microfluidic element/channel (63) is selected from a group consisting of carbon dioxide and nitrogen. (See Col. 7, Lines 33-35) Brand further teaches the filling the at least one microfluidic element/channel (63) with the gas of fluid (92) comprises filling the at least one microfluidic element/channel (63) with both gas (92) and a fluid (60). With respect to Claim 23, applicant recites, “a chamber *configured to* receive the microfluidic device”, it has been held that the recitation that an element is “configured to” perform a function is not a positive limitation but only requires the ability to so perform. The “microfluidic device” as recited in Claim 23, is not positively recited and thus is not give any patentable weight. Brand does not explicitly disclose a detector. It is inherent that an operator/detector is present who is configured to monitor filling of the microfluidic device with the gas or fluid.

3. **Claims 1,18,23 and 29-30** are rejected under 35 U.S.C. 102(b) as being anticipated by Fugere (US 6119895).

Fugere teaches placing the microfluidic device/flip chips in a vacuum chamber applying a vacuum to the vacuum chamber and while the microfluidic device remains under vacuum, introducing the gas or fluid into the vacuum chamber such that the microfluidic device is submerged in the gas or fluid. Fugere further teaches venting the at least one microfluidic element to the gas or fluid and filling the at least one microfluidic element with the gas or fluid. Fugere teaches, "To overcome the problem of voids or air gaps, one prior art dispensing system developed by Tessera of San Jose, Calif. utilizes a vacuum approach to completely underfill flip chips. In this prior art system, the dispensing system, including one or more flip chips that are to receive underfill material, is enclosed within an air tight chamber, and prior to the dispensing of underfill material, a vacuum pump is used to purge all air from the chamber to create a vacuum. The underfill material is then dispensed around all sides of the flip chips, and the chamber is returned to ambient pressure. When the chamber is returned to ambient air pressure, the underfill material is forced under the flip chips by the difference in air pressure outside the flip chips and under the flip chips." (See Col. 1, Lines 63-68 –Col. 2, Lines 1-9)

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. **Claims 4-8 and 25-28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Brand.

Refer above for the teachings of Brand.

Brand fails to explicitly disclose applying a vacuum at the various ranges to the chamber.

The device of Brand is clearly capable of adjusting to any desired pressure. It would have been obvious to one of the ordinary skill in the art to modify Brand to include

the various pressure ranges in order to minimize bubble formation of the filling of the microfluidic device.

8. **Claim 19** is rejected under 35 U.S.C. 103(a) as being unpatentable over Brand.
Refer above for the teachings of Brand.

Brand fails to explicitly disclose placing two or more microfluidic device in the vacuum chamber.

It would have been obvious to one of the ordinary skill in the art to modify Brand in order to place two or more microfluidic devices in the vacuum chamber in order to increase the efficiency of the process by increasing the number of microfluidic devices being filled at a time.

Allowable Subject Matter

Claims 11-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Prior art fails to teach or fairly suggest filling the at least one microfluidic element with the gas or fluid comprises diffusing the gas or fluid into the at least one microfluidic element and the microfluidic element is fluidly connected to an least one capillary element, which element includes a capillary channel disposed therein and further microfluidic comprises a plurality of microfluidic channels.

Response to Arguments

Applicant's arguments filed on January 25, 2006, with respect to the rejection(s) of claim(s) 1 and 4-30 under Hasskamp have been fully considered and are

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persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made. Please refer above.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Mitchell et al. (US 6046076)


Babiarz et al. (US 6255142)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jyoti Nagpaul whose telephone number is 571-272-1273. The examiner can normally be reached on Monday thru Friday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JN


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